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ABSTRACT

This paper describes the outcomes of a study that investigated if 153 college students at three local educational institutions (university, state college, community college) with mobility and functional impairments would have educational profiles different from nondisabled students and each other and, if so, the reasons for any differences. Results found significant differences between students with disabilities and without disabilities in the age at college entrance, age at each class level, time to complete college, part-time status, and type of financial support. The mean age at college entry was considerably higher than for the general college population and the length of time to complete college was considerably longer than for the general college population. The percentage of students with disabilities enrolled part-time was also greater than for typical students. Major sources of financial support for the students with disabilities were Supplemental Security Income and vocational rehabilitation funds. Significant factors contributing to the students' academic success were family (61 percent chose this as a factor), 60 percent their own personal attitude, and 52 percent the influence of instructors. Thirty-four percent reported lack of support from peers, 23 percent negative attitudes by faculty, 20 percent architectural barriers, and 19 percent inadequate financial support as major barriers to their education. (CR)

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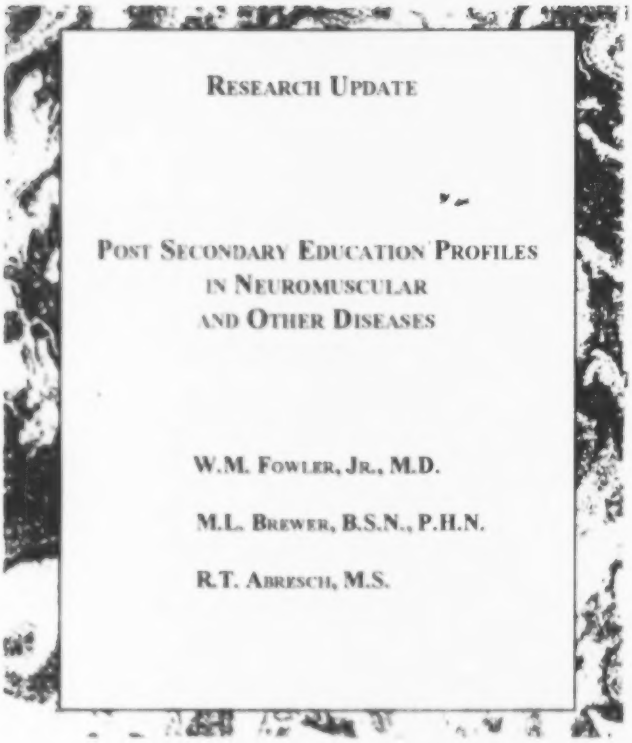

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Disablement consists of impairment, disability, and disadvantage. Impairment and disability often result in disadvantage which includes decreased educational and employment opportunities, decreased quality of life and reduced community integration. In the February 1997 RTC Newsletter, employment profiles were reviewed. The results of that study and national surveys showed that education had a significant effect on employment. More than twice as many unemployed Americans with disabilities have less than a high school education, as compared to working individuals with disabilities; more than twice as many employed individuals with disabilities are college graduates (1-4).

The purpose of this study was to determine if disabled college students with neuromuscular diseases and other disorders would have educational profiles different from nondisabled students and each other and, if so, the reasons for any differences. Disease groups were Neurologic - Neuromuscular Diseases (NMD), Neurologic - Other, Musculoskeletal-Arthritis, and Musculoskeletal-Other. Factors evaluated were age of entry into college, length of time to complete college, grade point averages, part-time/full-time status, living arrangements, family support, financial support, and other barriers perceived by students in college and high school.

Methodology

Post secondary education students with mobility and functional impairments were surveyed by questionnaire. Questionnaires were sent to students at three local educational institutions (University, State College, Community College). Students with disabilities were identified by the Offices of Student Affairs at the three institutions. The response rate was 32.2%; 153 students responding. Only 1% of the student enrollment in the three schools at the time of the survey represented individuals with mobility and functional impairments (5).

Results

Of the four disease groups, 13% were Neurologic-NMD, 39.3% Neurologic-Other, 20.9% Musculoskeletal-Arthritis, and 26.8% Musculoskeletal-Other. Forty-two percent were males and 58% were females (Table 1). In the non-disabled population at the three educational institutions, 48% were males and 52% were females (5). Ages at the time of the survey are reviewed in Table 1. With the exception of individuals with arthritis, females were older than males, and the group with arthritis was older than the other disease groups. Mean age at diagnosis of disease was 21.2 ± 14.6 with a range of 13 to 32 years. Thirty-one percent of the students were married; 36% males and 28% females. The highest percentage of married students was in the arthritic group. The percent married was not significantly different from the non-disabled student population (5).

Table 1
Disease Categories, Age and Gender

	Gender (#)			Age at Survey (mean ± 1 S.D.)		
Disease Category	Male	Female	Total	Male	Female	Total
Neurologic-NMD	12	8	20	33.5 ± 15.3	41.7 ± 10.9	36.7 ± 14.0
Neurologic - Other	31	29	60	30.7 ± 12.6	35.4 ± 10.1	33.1 ± 11.6
Musculoskeletal-Arthritis	5	27	32	45.0 ± 12.8	40.2 ± 13.6	40.7 ± 13.4
Musculoskeletal- Other	22	19	41	35.5 ± 11.8	36.7 ± 13.4	36.2 ± 12.6
Total	70	83	153	33.0 ± 13.0	37.6 ± 12.1	35.9 ± 12.4

Of the individuals reporting degree types, 39% expected B.A. and 33% expected B.S. degrees. The remainder were graduate students expecting M.A., M.S., or doctoral degrees. There were no gender or disease differences, and no difference from the non-disabled students. Forty-five percent were Letters & Science, 17% were Health & Human Services, & 13% were Business Administration majors (Table 2). There were no disease group differences, and the distribution of majors was similar to that of the non-disabled students (5). There were significantly more males than females in Business Administration and Engineering and more females than males in Letters & Science, which was also typical of the general college population.

Table 2
Majors (%)

	Male	Female	Total
Agriculture	8.8	8.3	8.5
Business Administration	20.2	7.4	12.8
Education	2.5	3.7	3.2
Engineering	13.9	2.8	7.5
Health & Human Services	13.9	19.4	17.1
Letters & Science	34.1	53.7	45.4
Law	1.2	0	0.5
Undeclared	11.4	8.3	9.6

Differences Between Disabled and Non-Disabled Students

There were significant differences between the disabled and non-disabled students in age entered college, age in each class level, time to complete college, part-time status, and type of financial support. The mean age at college entry for the four disease groups was 25.7± 12 (Table 3). About one third were less than 30 years old, one third 30 to 40 years old, and one third more than 40 years old. Students with arthritis were older than those with other disorders. There was an age/gender difference within some disease groups (females older than males, NMD, and males older than females, Arthritis.) For all disease groups, females were 1.5 years younger than males in entering college, about the same as for the non-disabled female students (5). Overall, the mean age at entry to college for disabled students was considerably higher than for the general college population, where 53% entered college at 18 years and 31% at 19 years of age (5).

Table 3

Disease Category	Age (yrs.) Entered College				Expected Time (yrs.)to Complete College			
	No.	Mean ± 1 S.D.			No.	Mean ± 1 S.D.		
		Male	Female	Total		Male	Female	Total
Neurologic-NMD	19	22.7±14.8	28.4 ±13	24.9 ±14	18	12.2±6.7	15±11.6	13 ±8
Neurologic -Other	56	23.8±10.5	23.7 ±8.9	23.8±9.6	45	9±5.8	13.9±10.5	11.3±8.7
Musculoskeletal -Arthritis	31	39.7±10	29.8 ±14.1	30 ±14.0	27	7.3±2.1	11.9±9.2	11.3±8.7
Musculoskeletal - Other	40	25.5 ±7.3	26.8±15.6	26.3±12.8	35	9.6 ±10.4	11.4±7.4	10.6±8.7
Total	146	26.3±12.7	24.8±11	25.7 ±12	129	9.6 ±7.1	12.7±9.3	11.3±8.5

The mean expected length of time to complete college was 11.3 ± 8.5 years (Table 3). For all disease groups combined, females expected 3.1 years longer than males to complete college. Overall, the mean length of time for students with disabilities to complete college was greater than for the general college population, in which only 27% took more than six years to finish college, and where the average time of completion was 4.5 years of enrolled time (6). A second measure of the length of time to complete college was a comparison of class level and age (Table 4). There were no significant differences among

disease groups. Gender differences varied between class levels. For freshman and sophomores, males were 10 to 21 years older than females, while females were older than males at the junior, senior and graduate class levels. Overall, mean age in the students with disabilities was considerably older for class level, than in the non-disabled students. In the latter, 53% of freshmen are 18 years old, and 30% are 19 years old. These general proportions continued as class levels for the non-disabled students increased with the sophomore class, primarily composed of 19 and 20 year old individuals, the junior class of 20 and 21 year old students, and the senior class of 21 and 22 year old individuals (5).

Table 4
Class Level and Age

Class Level	No.	Mean Age ± 1 S.D.		
		Male	Female	Total
Freshman	8	38.9 ± 19.4	18	36.3 ± 19.4
Sophomore	11	29.1± 6	19.5 ± 0.6	25.6 ± 6.8
Junior	32	28.5 ± 16.7	35.2 ± 14	33.5 ± 14.3
Senior	17	30.8 ± 6.7	35.6 ± 9.9	33.9 ± 9
5th Year Senior	25	32.9 ± 12.1	37.1± 10.2	33.8 ± 10.8
Graduate	54	36.1± 11.2	41.3 ± 9.5	39.2 ± 10.4

Thirty-eight percent of the 144 disabled students who responded (63 males, 81 females) were part-time as compared to only 2% of the non-disabled (5). There was no overall gender difference in the population with disabilities, although there were significant differences in two disease groups (females ≥ males, Neurologic-Other and males ≥ females, Arthritis). In the non-disabled students, more females were part-time than males, 15% more. Among disease groups, the NMD students had the lowest part-time status.

Thirty-seven percent of the 134 students with disabilities who responded indicated SSI as a source of financial support, 48% other, 30% work, and 25% family (Table 5). The percentage of support from SSI was highest in the NMD group (57%), and this group also had the lowest percentage of work (19%) as a source of support. Fifty-seven percent reported multiple sources of support. There was no gender difference. A comparison between disabled and non-disabled students is not possible since the latter do not receive SSI and Vocational Rehabilitation (VR) support. However, there was no significant difference between disabled and non-disabled students with respect to the percentage who work (5). Of 153 respondents, 38% reported that they were or had been VR clients, with 42% referred by a VR counselor, 8% referred by a College VR office, and 17% by other agencies or friends. Disease groups followed this pattern, although more NMD individuals (50%) reported having been VR clients, and their most often cited source of referral was VR offices at educational institutions (40%).

Table 5
Financial Sources

Disease Categories	No.	Percent						
		SSI	Trusts	Work	Voc. Rehab.	Family	Other	Multiple Svcs.
Neurologic-NMD	21	57.1	0	19	4.8	23.4	33.3	38.1
Neurologic-Other	50	36	6	26	16	20	44	48
Musculoskeletal -Arthritis	32	25	3.1	34.4	9.4	28.1	53	53.1
Musculoskeletal-Other	31	38.7	0	38.7	25.8	29	58.1	90.3
Total	134	37.3	3	29.8	14.9	24.6	47.8	57.5

Only 16 percent of the 151 students who responded were living at home; 23% males and 10% females. The percentage living at home was actually slightly lower (25%) than for the general college population (5). There were no significant disease differences.

The mean grade point average (GPA) in 148 respondents was 3.3 ± 0.5 with a maximum of 4.0 and a minimum of 1.5 (Table 6). Overall, the mean GPA was about the same as the GPA for the general college population (2.9). (5) There were no significant disease or gender differences.

Table 6
Grade Point Average

Disease Category	No.	Grade Point Average Mean ± 1 S.D.
Neurologic - NMD	20	3.2 ± 0.7
Neurologic - Other	55	3.2 ± 0.4
Musculoskeletal-Arthritis	32	3.4 ± 0.6
Musculoskeletal-Other	41	3.4 ± 0.5
Total	148	3.3 ± 0.5

Factors Perceived As Barriers to Academic Success in College

Seventy-eight percent of the 119 students responding indicated that their disability had significantly affected their career goals (Table 7). The highest percentage was in the musculoskeletal group. Of those who stated that their disability had affected their career goals, 82% reported a negative effect. The less affected were those with neuromuscular diseases.

Table 7
Effect of Disability on Career Goals

	No. Responses	Affected		Affected Negatively (of those affected)	
		No.	Percent	No.	Percent
Neurologic-NMD	15	9	60	6	66.7
Neurologic-Other	31	20	64.5	18	90
Musculoskeletal	73	61	83.6	52	85.4
Total	119	93	78.2	76	81.7

Sixty-one percent of the respondents chose family, 60% their own personal attitude, and 52% the influence of instructors as significant factors contributing to their academic success (Table 8). Thirty-four percent reported lack of support from peers, 23% negative attitudes by faculty, 20% architectural barriers, and 19% inadequate financial support as major barriers to their education. Thirty-six percent reported a change in their personal attitude, 23% a more positive attitude by their instructors, 23% improved financial assistance, and 22% improved attitudes by peers as factors which would have made their educational experience better. Although the percentages varied, all disease groups followed the same pattern, and there was no gender differences.

Table 8
Factors Affecting Educational Experience in College

	Factors Contributing To Academic Success	Barriers Experienced	Factors Which Would Have Made Educational Experience Better
No. Respondents	113	124	120
Percent Support			
• Peers	19.7	34	22.2
• Family	61.1	1	5.9
• Instructors	51.8	23.3	23.2
Percent Personal			
• Attitude	59.6	10.6	35.7
• Health	2	14.2	9.2
• Previous Education	0	4.1	5.4
Percent Financial	6.2	19.8	22.7
Percent Services			
• Counselor	30.1	10.1	20
• Physician	4.1	0	1
• Support Services	6.7	16.2	14.1
• VR	3.6	2.0	4.9
Percent Adaptive Accommodations			
• Architectural	2.6	20.3	6.5
• Computer	9.8	2.5	3.2
• Parking	2.1	4.6	
• Special Equipment & Seating	3.6	4.6	10.3
• Transportation	0.5	9.1	4.9
• Tutors	2.6	2.0	5.9

(Multiple Responses)

Pre-College Educational Experiences

Of the 137 individuals responding, 89% reported that they always or almost always considered themselves good students in high school (9-12) with no disease or gender difference.

Eighty-seven percent of the 135 students responding believed that their families were always or almost always supportive of them in high school, and 81% reported that their family encouraged them while in high school to attend college. Of 137 individuals, 80% reported that their social experiences and 92% that their educational experiences were always or almost always positive in high school. In 59 respondents to whom the question was applicable, 64% reported that their instructors in high school always or almost always made accommodations for their disability. Eighty-nine percent of 128 individuals to whom the question was applicable, stated that special education programs in high school were useful. There was no disease or gender difference.

Summary

The population of students with disabilities was similar to the general student population at the three educational institutions in gender, marital status, degrees expected, majors, living arrangements, and grade point averages.

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There were significant differences between students with disabilities and without disabilities in age entered college, age at each class level, time to complete college, and part-time status. The mean age at college entry was considerably higher than for the general college population, and the length of time to complete college was considerably longer than for the general college population. The percentage of students with disabilities enrolled part-time was also greater than for the non-disabled students. Major sources of financial support for the students with disabilities were SSI and VR (52%). However, the percentage who worked during college was about the same as for the general college population.

A large percentage of the students with disabilities indicated that their disability had a negative effect on their career goals. The major factors stated as contributing to academic success in college were a supportive family, personal attitude, and the influence of faculty. Lack of support from peers was considered to be the major barrier to their education. Health, financial support, support services, and most adaptive accommodations did not appear to be significant barriers.

When asked about their educational experiences in high school, responses were quite similar to those experienced in college, indicating a great deal of support, enthusiasm and ability for continuing their education. Eighty percent or more stated that their families were supportive and encouraged them to go to college, that they had positive social and educational experiences in high school, and that they considered themselves good students in high school. In both high school and college, the support and interest of other people (family, peers, instructors, counselors) and their own positive attitude appeared to be far more important factors in contributing to academic success than physical accommodations (architectural, special equipment, transportation) and even financial support.

Assuming that the criteria for academic success is, at least in part, completing college (regardless of age or length of time), obtaining a sound education (a respectable GPA) and having positive social and educational experiences, the students with disabilities in this study would be considered to be successful. Obtaining employment in reasonably well paying jobs is, of course, also a desirable outcome. Although the RTC employment study (7,8) found an employment rate of only 32%, it also showed that 67% of the workers in professional/technical/management occupations remained employed, as compared to only 32% in service/clerical/sales and industrial jobs. Type of occupation was directly related to the level of education, and the higher the level of education, the lower the percentage of unemployment. A successful college education is obviously equally important for individuals with and without disabilities.

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